

CLAIMS

1. A display characteristics calibration method for calibrating display characteristics of a color display unit provided with a conversion section having a conversion table for converting a display input gradation into a display output gradation for a plurality of colors and with a color display section for performing display in accordance with the display output gradation outputted from said conversion section, comprising the steps of:

calibrating said conversion section such that said color display section should show predetermined brightness and predetermined white chromaticity at a predetermined gradation of display input gradation;

displaying a white screen in correspondence to the display input gradation;

acquiring single color brightness of the plurality of colors from the displayed white screen, then applying a display output gradation corresponding to the display input gradation, and thereby acquiring correlation of display output gradation versus single color brightness;

calculating target white brightness for a plurality of gradations of display input gradation by using predetermined display characteristics and white brightness at the predetermined gradation;

distributing the target white brightness at a single color

brightness ratio of the predetermined gradation and thereby acquiring target single color brightness for a plurality of gradations of display input gradation;

acquiring a display output gradation that indicates brightness corresponding to the target single color brightness for a plurality of gradations of display input gradation, from the correlation of display output gradation versus single color brightness; and

establishing correspondence between the acquired display output gradation and the display input gradation and thereby calibrating said conversion table.

2. A display characteristics calibration method for calibrating display characteristics of a color display unit provided with a conversion section having a conversion table for converting a display input gradation into a display output gradation for a plurality of colors and with a color display section for performing display in accordance with the display output gradation outputted from said conversion section, comprising the steps of:

a first step of setting into the maximum gradation the display input gradation of the conversion table for a plurality of colors, then adjusting the display output gradation of the conversion table for a plurality of colors, and thereby acquiring an initial-calibration use display output gradation that causes brightness and white chromaticity of the color display section to become tentative target

brightness and target white chromaticity;

a second step of establishing correspondence between the maximum gradation of the display input gradation and the initial-calibration use display output gradation, and thereby performing initial calibration of the conversion table for a plurality of colors such that the correlation between the display input gradation and the display output gradation should become a predetermined function;

a third step of displaying a white screen at a plurality of gradations of display input gradation by using the conversion table for a plurality of colors having undergone the initial calibration;

a fourth step of acquiring single color brightness of a plurality of colors for a plurality of gradations of display input gradation from the white screen, then applying a display output gradation corresponding to the display input gradation, and thereby acquiring primary display output gradation versus single color brightness correlation characteristics of a plurality of colors;

a fifth step of calculating primary target white brightness for a plurality of gradations of display input gradation by using target display characteristics having been set up in advance as well as white brightness of the case that the display input gradation is at the maximum gradation and white brightness of the case that the display input gradation is at the minimum gradation which have been acquired from the white screen, and thereby acquiring primary display input gradation versus target white brightness correlation

characteristics;

a sixth step of proportionally distributing the primary target white brightness for a plurality of gradations of display input gradation by using the ratio of the single color brightness of a plurality of colors of the case that the display input gradation is at the maximum gradation, thereby calculating target single color brightness for a plurality of gradations of display input gradation, and thereby acquiring primary display input gradation versus target single color brightness correlation characteristics of a plurality of colors; and

a seventh step of acquiring a display output gradation that indicates brightness corresponding to the target single color brightness in the primary display input gradation versus target single color brightness correlation characteristics of a plurality of colors for a plurality of gradations of display input gradation, as a calibration-use display output gradation on the basis of the primary display output gradation versus single color brightness correlation characteristics, then establishing correspondence between the calibration-use display output gradation and the display input gradation, and thereby calibrating the conversion table for a plurality of colors.

3. The display characteristics calibration method according to claim 2, further comprising after said seventh step:

an eighth step of displaying a calibration white screen at a

plurality of gradations of display input gradation by using the calibrated conversion table for a plurality of colors;

a ninth step of acquiring single color brightness of a plurality of colors for a plurality of gradations of display input gradation from the calibration white screen, then applying a display output gradation corresponding to the display input gradation, and thereby acquiring secondary display output gradation versus single color brightness correlation characteristics of a plurality of colors; and

a tenth step of acquiring a display output gradation that indicates brightness corresponding to the target single color brightness in the primary display input gradation versus target single color brightness correlation characteristics of a plurality of colors for a plurality of gradations of display input gradation, as a calibration-use display output gradation on the basis of the secondary display output gradation versus single color brightness correlation characteristics, then establishing correspondence between the calibration-use display output gradation and the display input gradation, and thereby calibrating the conversion table for a plurality of colors.

4. The display characteristics calibration method according to claim 3, wherein said eighth step through said tenth step are repeated so that the secondary display output gradation versus single color brightness correlation characteristics should converge.

5. The display characteristics calibration method according to claim 4, further comprising:

an eleventh step of calculating secondary target white brightness for a plurality of gradations of display input gradation by using the target display characteristics as well as target brightness at the maximum gradation of the display input gradation and target brightness at the minimum gradation which have been set up in advance, and thereby acquiring secondary display input gradation versus target white brightness correlation characteristics;

a twelfth step of proportionally distributing the secondary target white brightness for a plurality of gradations of display input gradation by using the ratio of the single color brightness, thereby calculating target single color brightness of a plurality of colors for a plurality of gradations of display input gradation, and thereby acquiring secondary display input gradation versus target single color brightness correlation characteristics of a plurality of colors; and

a thirteenth step of acquiring a display output gradation that indicates brightness corresponding to the target single color brightness in the secondary display input gradation versus target single color brightness correlation characteristics of a plurality of colors for a plurality of gradations of display input gradation, as a calibration-use display output gradation on the basis of the converged secondary display output gradation versus single color brightness correlation characteristics, then establishing

correspondence between the calibration-use display output gradation and the display input gradation, and thereby calibrating the conversion table for a plurality of colors.

6. The display characteristics calibration method according to claim 5, wherein the tentative target brightness is set greater than the target brightness at the maximum gradation.

7. The display characteristics calibration method according to any one of claims 1 through 6, wherein the plurality of colors are red, green, and blue.

8. The display characteristics calibration method according to any one of claims 2 through 7, wherein the initial-calibration use display output gradation is adjusted such that the initial-calibration use display output gradation of any one of the plurality of colors should become the maximum gradation of output gradation.

9. The display characteristics calibration method according to any one of claims 1 through 8, wherein the plurality of gradations of display input gradation are all gradations of display input gradation.

10. The display characteristics calibration method according to any one of claims 1 through 9, wherein said color display unit is a color liquid crystal display unit.

11. A display characteristics calibration apparatus for calibrating display characteristics of a color display unit provided with a conversion section having a conversion table for converting a display input gradation into a display output gradation for a plurality of colors and with a color display section for performing display in accordance with the display output gradation outputted from said conversion section, comprising

an optical sensor for measuring brightness and white chromaticity of said color display section and a control section for controlling the processing of calibrating the display characteristics, wherein

said control section controls the processing of:

a first step of setting into the maximum gradation the display input gradation of the conversion table for a plurality of colors, then adjusting the display output gradation of the conversion table for a plurality of colors, then measuring brightness and white chromaticity of the color display section through said optical sensor, and thereby acquiring an initial-calibration use display output gradation that causes the brightness and the white chromaticity to become target brightness and target white chromaticity;

a second step of establishing correspondence between the maximum gradation of the display input gradation and the initial-calibration use display output gradation, and thereby performing initial calibration of the conversion table for a plurality of colors such that the correlation between the display input gradation

and the display output gradation should become a predetermined function;

a third step of displaying a white screen at a plurality of gradations of display input gradation by using the conversion table for a plurality of colors having undergone the initial calibration;

a fourth step of measuring single color brightness of a plurality of colors for a plurality of gradations of display input gradation in the white screen through said optical sensor, then applying a display output gradation corresponding to the display input gradation, and thereby acquiring display output gradation versus single color brightness correlation characteristics of a plurality of colors;

a fifth step of calculating target white brightness for a plurality of gradations of display input gradation by using target display characteristics having been set up in advance as well as white brightness of the case that the display input gradation is at the maximum gradation and white brightness of the case that the display input gradation is at the minimum gradation which have been acquired from the white screen, and thereby acquiring display input gradation versus target white brightness correlation characteristics;

a sixth step of proportionally distributing the target white brightness for a plurality of gradations of display input gradation by using the ratio of the single color brightness of a plurality of colors of the case that the display input gradation is at the maximum

gradation, thereby calculating target single color brightness for a plurality of gradations of display input gradation, and thereby acquiring display input gradation versus target single color brightness correlation characteristics of a plurality of colors; and

a seventh step of acquiring a display output gradation that indicates brightness corresponding to the target single color brightness in the display input gradation versus target single color brightness correlation characteristics of a plurality of colors for a plurality of gradations of display input gradation, as a calibration-use display output gradation on the basis of the display output gradation versus single color brightness correlation characteristics, then establishing correspondence between the calibration-use display output gradation and the display input gradation, and thereby calibrating the conversion table for a plurality of colors.

12. The display characteristics calibration apparatus according to claim 11, wherein said color display unit is a color liquid crystal display unit provided with a backlight, and wherein at said first step, brightness of the backlight is controlled in parallel.

13. The display characteristics calibration apparatus according to claim 11 or 12, wherein the brightness measured by said optical sensor is expressed by an absolute value.

14. The display characteristics calibration apparatus according to claim 11 or 12, wherein said optical sensor is capable of measuring brightness and chromaticity, so that single color brightness is calculated from the measured brightness and chromaticity.

15. A computer program for causing a computer to execute calibration of display characteristics of a color display unit provided with a conversion section having a conversion table for converting a display input gradation into a display output gradation for a plurality of colors and with a color display section for performing display in accordance with the display output gradation outputted from said conversion section, causing the computer to execute:

a first step of setting into the maximum gradation the display input gradation of the conversion table for a plurality of colors, then adjusting the display output gradation of the conversion table for a plurality of colors, then acquiring brightness and white chromaticity of said color display section, and thereby acquiring an initial-calibration use display output gradation that causes the brightness and the white chromaticity to become target brightness and target white chromaticity;

a second step of establishing correspondence between the maximum gradation of the display input gradation and the initial-calibration use display output gradation, and thereby performing initial calibration of the conversion table for a plurality of

colors such that the correlation between the display input gradation and the display output gradation should become a predetermined function;

a third step of displaying a white screen at a plurality of gradations of display input gradation by using the conversion table for a plurality of colors having undergone the initial calibration;

a fourth step of acquiring single color brightness of a plurality of colors for a plurality of gradations of display input gradation from the white screen, then applying a display output gradation corresponding to the display input gradation, and thereby acquiring display output gradation versus single color brightness correlation characteristics of a plurality of colors;

a fifth step of calculating target white brightness for a plurality of gradations of display input gradation by using target display characteristics having been set up in advance as well as white brightness of the case that the display input gradation is at the maximum gradation and white brightness of the case that the display input gradation is at the minimum gradation which have been acquired from the white screen, and thereby acquiring display input gradation versus target white brightness correlation characteristics;

a sixth step of proportionally distributing the target white brightness for a plurality of gradations of display input gradation by using the ratio of the single color brightness of a plurality of colors of the case that the display input gradation is at the maximum

gradation, thereby calculating target single color brightness for a plurality of gradations of display input gradation, and thereby acquiring display input gradation versus target single color brightness correlation characteristics of a plurality of colors; and

a seventh step of acquiring a display output gradation that indicates brightness corresponding to the target single color brightness in the display input gradation versus target single color brightness correlation characteristics of a plurality of colors for a plurality of gradations of display input gradation, as a calibration-use display output gradation on the basis of the display output gradation versus single color brightness correlation characteristics, then establishing correspondence between the calibration-use display output gradation and the display input gradation, and thereby calibrating the conversion table for a plurality of colors.

16. A display characteristics calibration method for calibrating display characteristics of a color display unit provided with: a conversion section having a conversion table for converting a display input gradation into a display output gradation for a plurality of colors; a gain adjustment section for multiplying the display output gradation outputted from said conversion section, by a predetermined gain constant specific to each of a plurality of colors, and then outputting the result as an adjustment gradation; and a color display section for performing display in accordance with the

adjustment gradation, comprising the steps of:

establishing correspondence between the correlation of the display input gradation with the display output gradation and a predetermined function and thereby calibrating said conversion table;

setting up the gain constant such that said color display section should display predetermined brightness and predetermined white chromaticity at a predetermined gradation of display input gradation of the calibrated conversion table;

displaying, after setting up the gain constant, a single color screen of each of a plurality of colors and thereby acquiring single color screen brightness of each of a plurality of colors;

displaying, after setting up the gain constant, a white screen at a plurality of gradations of display input gradation and thereby acquiring white brightness and single color brightness of a plurality of colors;

distributing the white brightness at the ratio of the single color brightness of a plurality of colors for the display input gradation with reference to the single color screen brightness, thereby calculating single color brightness for a plurality of gradations of display input gradation, then applying a display output gradation corresponding to the display input gradation, and thereby acquiring correlation of display output gradation versus single color brightness of a plurality of colors;

calculating target white brightness for a plurality of

gradations of display input gradation by using predetermined display characteristics and target brightness of the case that the display input gradation is at a predetermined gradation, and thereby acquiring correlation of display input gradation versus target white brightness;

distributing the target white brightness at the display input gradation versus target white brightness at the ratio of the single color screen brightness, and thereby calculating target single color brightness for a plurality of gradations of display input gradation;

acquiring a display output gradation that indicates brightness corresponding to the target single color brightness for a plurality of gradations of display input gradation, from the correlation of display output gradation versus single color brightness; and

establishing correspondence between the acquired display output gradation and the display input gradation and thereby calibrating said conversion table.

17. A display characteristics calibration method for calibrating display characteristics of a color display unit provided with: a conversion section having a conversion table for converting a display input gradation into a display output gradation for a plurality of colors; a gain adjustment section for multiplying the display output gradation outputted from said conversion section, by a predetermined gain constant specific to each of a plurality of colors,

and then outputting the result as an adjustment gradation; and a color display section for performing display in accordance with the adjustment gradation, comprising:

a first step of establishing correspondence between the correlation of the display input gradation with the display output gradation and a predetermined function and thereby performing initial calibration of the conversion table for a plurality of colors;

a second step of setting into the maximum gradation the display input gradation of the conversion table for a plurality of colors having undergone the initial calibration, and then setting up the gain constant such that the brightness and the white chromaticity of said color display section should become tentative target brightness and target white chromaticity;

a third step of displaying, after setting up the gain constant, a single color screen of each of a plurality of colors and thereby acquiring primary single color screen brightness of a plurality of colors;

a fourth step of displaying, after setting up the gain constant, a white screen at a plurality of gradations of display input gradation and thereby acquiring white brightness and primary single color brightness of a plurality of colors;

a fifth step of applying a display output gradation corresponding to the display input gradation, to the single color brightness for a plurality of gradations of display input gradation, and thereby acquiring primary display output gradation versus

single color brightness correlation characteristics of a plurality of colors;

a sixth step of calculating primary target white brightness for a plurality of gradations of display input gradation by using target display characteristics having been set up in advance as well as tentative target brightness of the case that the display input gradation is at the maximum gradation and tentative target brightness of the case that the display input gradation is at the minimum gradation which have been set up in advance, and thereby acquiring primary display input gradation versus target white brightness correlation characteristics;

a seventh step of proportionally distributing the primary target white brightness for a plurality of gradations of display input gradation by using the ratio of the primary single color screen brightness of a plurality of colors, thereby calculating target single color brightness for a plurality of gradations of display input gradation, and thereby acquiring primary display input gradation versus target single color brightness correlation characteristics of a plurality of colors; and

an eighth step of acquiring a display output gradation that indicates brightness corresponding to the target single color brightness in the primary display input gradation versus target single color brightness correlation characteristics of a plurality of colors for a plurality of gradations of display input gradation, as a calibration-use display output gradation on the basis of the primary

display output gradation versus single color brightness correlation characteristics, then establishing correspondence between the calibration-use display output gradation and the display input gradation, and thereby calibrating the conversion table for a plurality of colors.

18. The display characteristics calibration method according to claim 17, further comprising after said eighth step:

a ninth step of displaying a single color screen of each of a plurality of colors and thereby acquiring secondary single color screen brightness of a plurality of colors;

a tenth step of displaying a white screen at a plurality of gradations of display input gradation and thereby acquiring white brightness and secondary single color brightness of a plurality of colors;

an eleventh step of applying a display output gradation corresponding to the display input gradation, to the single color brightness for a plurality of gradations of display input gradation, and thereby acquiring secondary display output gradation versus single color brightness correlation characteristics of a plurality of colors;

a twelfth step of calculating secondary target white brightness for a plurality of gradations of display input gradation by using target display characteristics having been set up in advance as well as target brightness of the case that the display input gradation

is at the maximum gradation and target brightness of the case that the display input gradation is at the minimum gradation which have been set up in advance, and thereby acquiring secondary display input gradation versus target white brightness correlation characteristics;

a thirteenth step of proportionally distributing the secondary target white brightness for a plurality of gradations of display input gradation by using the ratio of the secondary single color screen brightness of a plurality of colors, thereby calculating target single color brightness for a plurality of gradations of display input gradation, and thereby acquiring secondary display input gradation versus target single color brightness correlation characteristics of a plurality of colors; and

a fourteenth step of acquiring a display output gradation that indicates brightness corresponding to the target single color brightness in the secondary display input gradation versus target single color brightness correlation characteristics of a plurality of colors for a plurality of gradations of display input gradation, as a calibration-use display output gradation on the basis of the secondary display output gradation versus single color brightness correlation characteristics, then establishing correspondence between the calibration-use display output gradation and the display input gradation, and thereby calibrating the conversion table for a plurality of colors.

19. The display characteristics calibration method according to claim 17, further comprising after said eighth step:

a fifteenth step of displaying a white screen at a plurality of gradations of display input gradation, thereby acquiring white brightness, then applying a display output gradation corresponding to the display input gradation, and thereby acquiring display output gradation versus white brightness correlation characteristics;

a sixteenth step of calculating secondary target white brightness for a plurality of gradations of display input gradation by using target display characteristics having been set up in advance as well as target brightness of the case that the display input gradation is at the maximum gradation and target brightness of the case that the display input gradation is at the minimum gradation which have been set up in advance, and thereby acquiring secondary display input gradation versus target white brightness correlation characteristics; and

a seventeenth step of acquiring a display output gradation that indicates brightness corresponding to the secondary target white brightness in the secondary display input gradation versus white brightness correlation characteristics for a plurality of gradations of display input gradation, as a calibration-use display output gradation on the basis of the display output gradation versus white brightness correlation characteristics, then establishing correspondence between the calibration-use display output gradation and the display input gradation, and thereby calibrating

the conversion table for a plurality of colors.

20. The display characteristics calibration method according to claim 18 or 19, wherein the tentative target brightness and the target brightness have a relation that the tentative target brightness at said second step $>$ the tentative target brightness at the maximum gradation at said sixth step $>$ the target brightness at the maximum gradation at said twelfth step or said sixteenth step.

21. The display characteristics calibration method according to any one of claims 16 through 20, wherein the plurality of colors are red, green, and blue.

22. The display characteristics calibration method according to any one of claims 16 through 21, wherein the gain constant is such that the gain constant of any one of a plurality of colors is set at the maximum.

23. The display characteristics calibration method according to any one of claims 16 through 22, wherein the plurality of gradations of input gradation are all gradations of input gradation.

24. The display characteristics calibration method according to any one of claims 16 through 23, wherein said color display unit is a color liquid crystal display unit.

25. A display characteristics calibration apparatus for calibrating display characteristics of a color display unit provided with: a conversion section having a conversion table for converting a display input gradation into a display output gradation for a plurality of colors; a gain adjustment section for multiplying the display output gradation outputted from said conversion section, by a predetermined gain constant specific to each of a plurality of colors, and then outputting the result as an adjustment gradation; and a color display section for performing display in accordance with the adjustment gradation, comprising

an optical sensor for measuring brightness and white chromaticity of said color display section and a control section for controlling the processing of calibrating the display characteristics, wherein

said control section controls the processing of:

a first step of establishing correspondence between the correlation of the display input gradation with the display output gradation and a predetermined function and thereby performing initial calibration of the conversion table;

a second step of setting into the maximum gradation the display input gradation of the conversion table of a plurality of colors having undergone the initial calibration, then measuring brightness and white chromaticity of said color display section through said optical sensor, and then setting up the gain constant such that the

brightness and said white chromaticity should become target brightness and target white chromaticity;

a third step of displaying, after setting up the gain constant, a single color screen of each of a plurality of colors and then measuring single color screen brightness of a plurality of colors through said optical sensor;

a fourth step of displaying, after setting up the gain constant, a white screen at a plurality of gradations of display input gradation and then measuring white brightness and single color brightness of a plurality of colors through said optical sensor;

a fifth step of applying a display output gradation corresponding to the display input gradation, to the single color brightness for a plurality of gradations of display input gradation, and thereby acquiring display output gradation versus single color brightness correlation characteristics of a plurality of colors;

a sixth step of calculating target white brightness for a plurality of gradations of display input gradation by using target display characteristics having been set up in advance as well as target brightness of the case that the display input gradation is at the maximum gradation and target brightness of the case that the display input gradation is at the minimum gradation which have been set up in advance, and thereby acquiring display input gradation versus target white brightness correlation characteristics;

a seventh step of proportionally distributing the target white brightness for a plurality of gradations of display input gradation by

using the ratio of the single color screen brightness of a plurality of colors, thereby calculating target single color brightness for a plurality of gradations of display input gradation, and thereby acquiring display input gradation versus target single color brightness correlation characteristics of a plurality of colors; and

an eighth step of acquiring a display output gradation that indicates brightness corresponding to the target single color brightness in the display input gradation versus target single color brightness correlation characteristics of a plurality of colors for a plurality of gradations of display input gradation, as a calibration-use display output gradation on the basis of the display output gradation versus single color brightness correlation characteristics, then establishing correspondence between the calibration-use display output gradation and the display input gradation, and thereby calibrating the conversion table for a plurality of colors.

26. The display characteristics calibration apparatus according to claim 25, wherein said color display unit is a color liquid crystal display unit provided with a backlight, and wherein at said second step, brightness of the backlight is controlled in parallel.

27. The display characteristics calibration apparatus according to claim 25 or 26, wherein the single color brightness of a plurality of colors measured by said optical sensor is expressed by a

relative value, and wherein the single color brightness is normalized so that the single color brightness at said fifth step is calculated.

28. The display characteristics calibration apparatus according to claim 25 or 26, wherein said optical sensor is capable of measuring brightness and chromaticity, so that the single color brightness at said fourth step is calculated from the measured brightness and chromaticity.

29. A computer program for causing a computer to execute calibration of display characteristics of a color display unit provided with: a conversion section having a conversion table for converting a display input gradation into a display output gradation for a plurality of colors; a gain adjustment section for multiplying the display output gradation outputted from said conversion section, by a predetermined gain constant specific to each of a plurality of colors, and then outputting the result as an adjustment gradation; and a color display section for performing display in accordance with the adjustment gradation, causing the computer to execute:

a first step of establishing correspondence between the correlation of the display input gradation with the display output gradation and a predetermined function and thereby performing initial calibration of the conversion table;

a second step of setting into the maximum gradation the display input gradation of the conversion table for a plurality of

colors having undergone the initial calibration, and then setting up the gain constant such that the brightness and the white chromaticity of said color display section should become tentative target brightness and target white chromaticity;

a third step of displaying, after setting up the gain constant, a single color screen of each of a plurality of colors and thereby acquiring primary single color screen brightness of a plurality of colors;

a fourth step of displaying, after setting up the gain constant, a white screen at a plurality of gradations of display input gradation and thereby acquiring white brightness and primary single color brightness of a plurality of colors;

a fifth step of applying a display output gradation corresponding to the display input gradation, to the single color brightness for a plurality of gradations of display input gradation, and thereby acquiring primary display output gradation versus single color brightness correlation characteristics of a plurality of colors;

a sixth step of calculating primary target white brightness for a plurality of gradations of display input gradation by using target display characteristics having been set up in advance as well as tentative target brightness of the case that the display input gradation is at the maximum gradation and tentative target brightness of the case that the display input gradation is at the minimum gradation which have been set up in advance, and thereby

acquiring primary display input gradation versus target white brightness correlation characteristics;

a seventh step of proportionally distributing the primary target white brightness for a plurality of gradations of display input gradation by using the ratio of the primary single color screen brightness of a plurality of colors, thereby calculating target single color brightness for a plurality of gradations of display input gradation, and thereby acquiring primary display input gradation versus target single color brightness correlation characteristics of a plurality of colors; and

an eighth step of acquiring a display output gradation that indicates brightness corresponding to the target single color brightness in the primary display input gradation versus target single color brightness correlation characteristics of a plurality of colors for a plurality of gradations of display input gradation, as a calibration-use display output gradation on the basis of the primary display output gradation versus single color brightness correlation characteristics, then establishing correspondence between the calibration-use display output gradation and the display input gradation, and thereby calibrating the conversion table for a plurality of colors.

30. The computer program according to claim 29, causing the computer to execute after said eighth step:

a ninth step of displaying a single color screen of each of a

plurality of colors and thereby acquiring secondary single color screen brightness of a plurality of colors;

a tenth step of displaying a white screen at a plurality of gradations of display input gradation and thereby acquiring white brightness and secondary single color brightness of a plurality of colors;

an eleventh step of normalizing each of the secondary single color brightness of a plurality of colors for the display input gradation with reference to the secondary single color screen brightness, then proportionally distributing the white brightness acquired at said tenth step, by using the ratio of the normalized secondary single color brightness of a plurality of colors, thereby calculating single color brightness for a plurality of gradations of display input gradation, then applying a display output gradation corresponding to the display input gradation, and thereby acquiring secondary display output gradation versus single color brightness correlation characteristics of a plurality of colors;

a twelfth step of calculating secondary target white brightness for a plurality of gradations of display input gradation by using target display characteristics having been set up in advance as well as target brightness of the case that the display input gradation is at the maximum gradation and target brightness of the case that the display input gradation is at the minimum gradation which have been set up in advance, and thereby acquiring secondary display input gradation versus target white brightness correlation

characteristics;

a thirteenth step of proportionally distributing the secondary target white brightness for a plurality of gradations of display input gradation by using the ratio of the secondary single color screen brightness of a plurality of colors, thereby calculating target single color brightness for a plurality of gradations of display input gradation, and thereby acquiring secondary display input gradation versus target single color brightness correlation characteristics of a plurality of colors; and

a fourteenth step of acquiring a display output gradation that indicates brightness corresponding to the target single color brightness in the secondary display input gradation versus target single color brightness correlation characteristics of a plurality of colors for a plurality of gradations of display input gradation, as a calibration-use display output gradation on the basis of the secondary display output gradation versus single color brightness correlation characteristics, then establishing correspondence between the calibration-use display output gradation and the display input gradation, and thereby calibrating the conversion table for a plurality of colors.

31. The computer program according to claim 29, causing the computer to execute after said eighth step:

a fifteenth step of displaying a white screen at a plurality of gradations of display input gradation, thereby acquiring white

brightness, then applying a display output gradation corresponding to the display input gradation, and thereby acquiring display output gradation versus white brightness correlation characteristics;

a sixteenth step of calculating secondary target white brightness for a plurality of gradations of display input gradation by using target display characteristics having been set up in advance as well as target brightness of the case that the display input gradation is at the maximum gradation and target brightness of the case that the display input gradation is at the minimum gradation which have been set up in advance, and thereby acquiring secondary display input gradation versus target white brightness correlation characteristics; and

a seventeenth step of acquiring a display output gradation that indicates brightness corresponding to the secondary target white brightness in the secondary display input gradation versus white brightness correlation characteristics for a plurality of gradations of display input gradation, as a calibration-use display output gradation on the basis of the display output gradation versus white brightness correlation characteristics, then establishing correspondence between the calibration-use display output gradation and the display input gradation, and thereby calibrating the conversion table for a plurality of colors.